REMARKS

Prior to this Reply, Claims 21-27 were pending. Through this Reply, Claims 21-27 have been amended, and Claims 28-70 have been added. Accordingly, Claims 21-70 are now at issue in the present case.

I. Allowable Subject Matter

The Examiner objected to Claim 24 as being dependent upon a rejected base claim. However, the Examiner indicated that such claim would be allowable if it were rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Instead of rewriting such claim in independent form, Applicants offer the following arguments.

II. Claim Rejections

The Examiner rejected Claims 21-27[1] under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,101,053 to Takahashi (hereinafter "Takahashi").

Takahashi discloses a disk drive that provides an optimum write current at a temperature based on measuring a parameter of the disk drive that is dependent upon temperature. In a tracks per inch (TPI) margin measuring process, the head writes a data pattern to a track and the adjacent tracks using a write current, then the head reads the data pattern from the track, and then the disk drive determines whether the error rate of the data pattern read from the track is less than a limit. If not, the write current is increased and the process repeats.

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[1] The Examiner appears to have inadvertently rejected Claim 24 based on Takahashi. The Examiner's remarks are directed to Claims 21-23 and 25-27, and the Examiner subsequently indicated that Claim 24 contains allowable subject matter. Therefore, the Examiner apparently rejected Claims 21-23 and 25-27 based on Takahashi.

Figure 7 (discussed by the Examiner) discloses a TPI margin measuring process that is particularly unclear. For instance, step S10 determines whether the error rate is less than a limit (10^{-n}). If so, the data is rewritten to the adjacent tracks in steps S7 and S8 and then read from the center track in step S9 and reevaluated in step S10. However, this creates an infinite loop if the write current maintains an error rate that is less than the limit. Furthermore, if step S10 determines that the error rate is not less than the limit, then step S10-1 determines whether the write current makes the track offset (ΔX) the maximum value. If so, the write current is selected, otherwise the write current is increased and the process repeats. However, this also makes little sense since the selected write current fails to meet the error rate limit.

At any rate, the TPI margin measuring process evaluates the write current based on the error rate, nothing more. Once the maximum write current is selected based on the error rate, it is not subject to further testing or adjustment.

Claim 21 recites "determining a maximum write current which satisfies a predetermined bit error rate associated with writing data to the disk using the head; then determining whether the maximum write current satisfies a write induced instability test associated with reading data from the disk using the head."

Claim 25 recites "determining a bit error rate for the data read from the first track using the head . . . setting a nominal write current that does not result in the bit error rate exceeding the predetermined bit error rate; then writing data to a track of the disk as the nominal write current is supplied to the head; and in response to detecting at least one of an error reading servo sector position information from the track using the head and a position error signal indicating a change in position of the head relative to the track, decreasing the nominal write current."

Claims 21-27 are patentably distinguishable from the cited references because none of the cited references teach the steps of performing a bit error rate test to determine a maximum write current based on a measured temperature and then performing a write instability test using the maximum write current, wherein the maximum write current is adjusted if the write instability test is not satisfied.

Takahashi fails to teach or suggest decreasing the maximum write current if it does not satisfy a write induced stability test (Claim 21). Likewise, Takahashi fails to teach or suggest decreasing the maximum write current if an error is detected in servo sector position information or a position error signal indicates head position change (Claim 25).

The Examiner asserts that "Takahashi teaches . . . Determining a maximum write current which satisfies a predetermined bit error rate (Col. 9, L. 60-67); Determining whether the maximum write current which satisfies said predetermined bit error rate satisfies a write induced instability test associated with reading the data from said disk using said read head (Col. 10, L. 22-44); If said maximum write current which satisfies said predetermined bit error rate does not satisfy said write induced instability test, then reducing said maximum write current until said write induced instability test is satisfied (Col. 10, L. 22-44). Claim (25) has limitations similar to those treated in the above rejection, and is met by the references discussed above."

The cited passages state as follows:

> In FIG. 7, a step Si sets a write current Iw. This write current Iw is set to Iw=w mA in steps of 2 mA if w=20 mA to 50 mA, for example. A step selects a head number n. In this case, the head number is selected in an order of "0" to "n". A step S3 decides whether or not the head number is equal to the maximum number MAX plus one (that is, MAX+1), and the process ends if the head number is MAX+1=n+1 and the decision result is YES. (Col.7, lines 60-67).

A step S7 makes a seek operation with respect to the cylinder number m+1, and writes the data by offsetting the head 13 by ΔX μm towards the cylinder number m. In addition, the step S8 makes a seek operation with respect to the cylinder number m-1, and writes the data by offsetting the head 13 by ΔX μm towards the cylinder number m. A step S9 reads the data from the cylinder number m, and a step S10 decides whether or not an error rate of the read data is less than 10_{-n}. The process returns to the step S7 if the decision result in the step S10 is YES. (Col. 10, lines 22-31).

On the other hand, if the decision result in step S10 is NO, a step S10-1 decides whether or not the write current Iw is a maximum. In other words, since the write current Iw is set in steps of 2 mA in the range of 20 mA to 50 mA in this case, the step S10-1 detects the write current Iw which makes ΔX a maximum value within the range of 20 mA to 50 mA. If the decision result in the step S10-1 is NO, the process returns to the step S1 and the write current Iw is changed by a step of 2 mA. Therefore, the measurement is made in the range of Iw=20 mA to 50 mA, and the write current Iw which makes the limit value of ΔX the maximum is found. On the other hand, if the decision result in the step S10-1 is YES, a limit value which makes the error rate greater than or equal to 10_{-n} by offsetting the head 13 by ΔX μm is obtained. (Col. 10, lines 32-46).

The cited passages say nothing about testing the maximum write current for anything other than error rate, much less a write induced stability test, an error in servo sector position information or a position error signal that indicates head position change.

If the Examiner continues to insist that "Takahashi teaches . . . reducing said maximum write current until said write induced instability test is satisfied (Col. 10, L. 22-44)," Applicants respectfully request that the Examiner identify the specific teaching in Takahashi that supports this contention rather than vaguely referring to lengthy passages.

III. New Claims

Claims 28-70 have been added. No new matter has been added.

Claims 28-30 depend from Claim 25 and are believed to be allowable for at least the same reasons as Claim 25.

Claim 31 recites "providing a first write current with acceptable bit error rate at the ambient temperature by adjusting an initial write current; and then providing a second write current with acceptable stability of the head at the ambient temperature by adjusting the first write current." Takahashi fails to teach or suggest testing head stability, much less doing so by adjusting the maximum write current from the TPI margin measuring process. Therefore, Claim 31 is believed to be allowable.

Claims 32-50 depend from Claim 31 and are believed to be allowable for at least the same reasons as Claim 31.

Claim 51 is believed to be allowable for at least the same reasons as Claim 31. Claims 52-60 depend from Claim 51 and are believed to be allowable for at least the same reasons as Claim 51.

Claim 61 is believed to be allowable for at least the same reasons as Claim 31. Claims 62-70 depend from Claim 61 and are believed to be allowable for at least the same reasons as Claim 61.

IV. Amendments to Claims

The claims have been amended to improve clarity. No new matter has been added.

V.   Amendments to Specification

A substitute specification without claims (and a marked-up version thereof) is

provided herein under 37 C.F.R. 1.125 to improve clarity of the specification. No new

matter has been added.

Applicants respectfully request that the substitute specification be entered.

VI.   Amendments to Drawings

Applicants are submitting replacement Figures 6 and 7 (contained on Replacement Sheets

1-2) to improve the quality of the drawings.

Figure 6 has been modified to revise steps 604, 608, 612, 616, 620, 624, 628, 632, 636

and 640, primarily to designate the write current and write current boost by name rather than by

"i" and "j" indices.

Figure 7 has been modified to revise steps 700, 712, 716 and 724, primarily to designate

the write current and write current boost by name rather than by "i" and "j" indices.

No new matter has been added. Figures 1-4, 5A, 5B, 5C and 6-8 constitute all of the

drawings of the application.

VII.   Additional Claim Fees

In determining whether additional claim fees are due, reference is made to the Fee

Calculation Table (below).

Fee Calculation Table

	Claims Remaining After Amendment		Highest Number Previously Paid For	Present Extra	Rate	Additional Fee
Total (37 CFR 1.16(c))	50	Minus	20	= 30	x $50 =	$1500.00
Independent (37 CFR 1.16(b))	5	Minus	4	= 1	x $200 =	$200.00

As set forth in the Fee Calculation Table (above), Applicants previously paid claim fees for twenty (20) total claims and for four (4) independent claims. Therefore, Applicants hereby authorize the Commissioner to charge the credit card identified on the enclosed Form PTO-2038 in the amount of $1700.00 for the presentation of thirty (30) total claims over twenty (20) and one (1) independent claim over four (4). Although Applicants believe that no other fees are due, the Commissioner is hereby authorized to charge Deposit Account No. 50-2198 for any fee deficiencies associated with filing this paper.
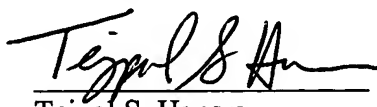
VIII. <u>Conclusion</u>

It is believed the above comments establish patentability. Applicants do not necessarily accede to the assertions and statements in the Office Action, whether or not expressly addressed.

Applicants believe that the application appears to be in form for allowance. Accordingly, reconsideration and allowance thereof is respectfully requested.

The Examiner is invited to contact the undersigned at the below-listed telephone number regarding any matters relating to the present application.

Respectfully submitted,

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